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## Technical Memorandum

**Date:** August 9, 2018  
**To:** Jonathan Wright, WDNR  
**From:** David Seitz, TRC  
**Subject:** Container Life Cycle Management; 3950 South Pennsylvania Avenue,  
Saint Francis, Wisconsin  
**Project No.:** 289398

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In this document, we summarize the various emission limits included in permits issued to the former Mid America Steel Drum (now Container Life Cycle Management) facility located at 3950 South Pennsylvania Avenue, Saint Francis, Wisconsin.

On September 23, 2013, when the facility was operating as Mid America Steel Drum, the Wisconsin Department of Natural Resources (WDNR) issued Operation Permit No. 241063570-P12. At that time the Pennsylvania Avenue facility was regulated as a single source with the Norwich Avenue facility. A review of those limits shows that with the issuance of this permit, the Potential to Emit of the facility was below 250 TPY. Furthermore, it can be demonstrated that the facility did not emit 250 tons or more of any regulated air pollutant following issuance of this permit, and therefore, the facility at that time was not a Major Source as defined under the regulations for Prevention of Significant Deterioration (PSD).

The PSD regulations define a "Major stationary source" to mean "any stationary source which emits, or has the potential to emit, 250 tons per year or more of any air contaminant subject to regulation under the act." We note that the operations at this location do not fit under the specific source categories that would be subject to the 100 ton per year threshold.

"Potential to emit" means the maximum capacity of a stationary source to emit an air contaminant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit an air contaminant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable. Secondary emissions do not count in determining the potential to emit of a stationary source.

Operation Permit No. 241063570-P12, issued to the combined former operations at the Norwich and Pennsylvania Avenue buildings, included the following conditions that limited potential emission rates.

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Permit Condition	Affected Operations	Permit Restriction
D.3.a.	Process P32B, Stack S12B — Curing Oven. Process P32C, Control Device C32C (Fabric Filter), Stack S12C —Auto External Drum Spray Booth.	Note: see condition I.ZZZ.1.a.(2), which limits VOC emissions from sources at Norwich Avenue site to 12,333 pounds per month, averaged over any 12 consecutive month period.
H.1.a. (1)	Process P44, Stack S44 —Label Stripping. [located at Pennsylvania Avenue site] S44 denotes fugitive emissions.	Latest Available Control Technology (LACT) applies to this process. LACT is determined to be: (a) VOC emissions not to exceed 1,666 pounds per month averaged over any 12 consecutive month period;
I.1.b. (2)	Process P80A, Stack(s) S21, S60 — Caustic Preflush with Hot Caustic Heater. Process P80B, Stack(s) S21, S61 — Exterior Wash/Soaker with Hot Caustic Heater. Process P80C, Stack S21 — Exterior Rinse. Process P95, Stack S21 — Small Plastic Drum Caustic Preflush	(a) Emissions (except natural gas combustion products) from P80A and P80B shall be controlled by a wet scrubber (C21). (b) Emissions from P80C and P95 shall be controlled by a wet scrubber (C21). [s. 285.65(3), Wis. Stats., s. NR 407.09(4)(a)3.b., Wis. Adm. Code {Permit 08-RSG-053}]
I.4.a. (1)		Each of the processes P80A, P80B may not operate for more than 100 hours during any week.
J.3.a. (1)	Process P42A, Stack S64 — Hot Water Heater. Process P42B, Stack S63 —Hot Water Heater. Process P42C, Stack S62 — Hot Water Heater. Process P41, Stack S66 —Drying Oven/Flamer.	Each of the processes P42A, P42B, P42C, P41 may not operate for more than 100 hours during any week.
L.1.b. (2)	Process P90, Control Device C21 (Wet Scrubber), Stack S21 —Tote Caustic Wash.	Emissions from P90 shall be controlled by a wet scrubber (C21).
L.4.a. (1)	Process P90, Control Device C21 (Wet Scrubber), Stack S21 —Tote Caustic Wash. Process P90A, Stack S67 — Hot Caustic Heater. Process P90B, Stack S68 —Hot Caustic Heater. Process P90C, Stack S69 — Hot Water Heater.	Each of the processes P90A, P90B, P90C may not operate for more than 100 hours during any week.
M.1.a. (1)	Process P45, Stack S45 — Plastic Drum Cleaning. [located at Pennsylvania Avenue site] Stack S45 denotes fugitive emissions	Latest Available Control Technology (LACT) applies to this process. LACT is determined to be: (a) VOC emissions not to exceed 1,666 pounds per month averaged over any 12 consecutive month period;

These permit conditions and associated compliance demonstration and monitoring provisions were federally enforceable, effectively limiting the potential emission rates of all air pollutants emitted by those operations, including co-pollutants.

In addition, the operation permit contained “synthetic minor conditions” applicable to the entire facility, as follows:

<b>ZZZ. Conditions Applicable to the Entire Facility.</b>
<b>1. Synthetic Minor Conditions</b>
<b>a. Limitations:</b> (1) VOC emissions from the Pennsylvania Avenue site (excluding VOC emissions from combustion of natural gas) may not exceed 4,000 pounds per month, averaged over any 12 consecutive month period. [s. 285.65(7), Wis. Stats. {Permit 08-RSG-053}] Note: Permittee elected this condition to avoid non-attainment area major source review under the ozone 1-hr standard, for the construction (1995 construction) of sources at the Pennsylvania Avenue Site. Maximum theoretical VOC emissions from combustion of natural gas for sources constructed at the Pennsylvania Avenue site in 1995 are less than 1 tpy. (2) VOC emissions from the Norwich Avenue site (excluding VOC emissions from combustion of natural gas) may not exceed 12,333 pounds per month, averaged over any 12 consecutive month period. [s. 285.65(7), Wis. Stats. {Permit 08-RSG-053}] (3) VOC emissions from combustion of natural gas at the facility may not exceed 250 pounds per month, averaged over any 12 consecutive month period. [s. 285.65(7), Wis. Stats. {Permit 08-RSG-053}] Note: Elected conditions (1), (2) and (3) ensure VOC emissions from the facility are less than 100 tpy. Therefore, the facility will remain a synthetic minor moderate non-attainment area minor source under the ozone 8-hr standard [1].

The facility was (and continues to be) required by permit to operate the scrubber and certain other air pollution control equipment. Additionally, most source operations were limited by the operating permit to no more than 100 hours of operation in any week. These permit conditions are appropriately considered in the determination of the source’s potential to emit.

Discounting the emission limit for the operations previously conducted at the Pennsylvania Avenue building by Mid America, and assuming that potential emissions from sources not identified in the permit are emission sources, the potential to emit and actual emissions have, since at least 2013, been less than the Major Source threshold of 250 tons per year. Emission data indicates a maximum emission rate from the drum wash line (identified in permits as Processes 80A, P80B, and P80C, and other operations that follow in this process line) with consideration of the scrubber and restriction on

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<sup>1</sup> This statement is in error because the area had been reclassified to attainment with the 1997 8-Hour Ozone NAAQS on July 31, 2012, and determined to be unclassifiable/attainment with the 2008 8-Hour Ozone NAAQS on July 20, 2012. As a result, the permit condition established the facility as a minor source with respect to the Prevention of Significant Deterioration provisions of Chapter NR 405, Wis. Adm. Code.

operating hours to 100 per week to be no more than 139.5 tons of VOC per year, calculated as follows:

$$E = 53.65 \text{ lb} \frac{\text{VOC}}{\text{hr}} \times 100 \frac{\text{hr}}{\text{week}} \times 52 \frac{\text{weeks}}{\text{year}} \times \frac{\text{Ton}}{2000 \text{ lb}} = 139.5 \text{ tons} \frac{\text{VOC}}{\text{year}}$$

Combined with the allowed emission rate of 99.5 tons per year as stated in the operation permit results in a maximum emission rate of 239.0 tons VOC per year.

The potential emission rates above are based upon a sampling protocol using EPA Method 25A, which measures total organic compounds as propane, for operations as they currently exist. This analysis overstates total VOC emissions from the process because it assumes that all organic compounds measured during sampling at the facility were in fact VOC, while contemporaneous data shows that a significant fraction of the emissions from the wash station are non-VOC organic compounds such as acetone. Samples were collected simultaneously and analyzed by GC/MS pursuant to EPA Method TO-15. The GC/MS analysis yielded a maximum emission rate of 36.84 pounds per hour, which included over 16 pounds per hour of acetone. The GC/MS analyses indicated that acetone accounted for 25 to 55 percent of the total mass of organic compound emissions from the wash station.

In addition, the sampling protocol was executed using the building as a total enclosure, and as a result, emissions from sources in addition to the drum wash line were likely measured and are included in the above calculation. These would include emissions from the Plastic Drum Label Stripping (P44), the Poly Drum Wipe Cleaning (P45), and fugitive emissions from the Paint Line (P32B and P32C). However, because these operations have separate permit restrictions that establish their potential to emit, no attempt was made to exclude emissions from these operations, that may have been included in the measurements from the sampling protocol.

Actual emission rates from the wash station, even assuming the acetone to be VOC, have been shown to be less than 40 tons per year. Combined with emissions from all other operations at the Norwich and Pennsylvania Avenue facilities, VOC emissions can be demonstrated to have been significantly less than the Major Source threshold of 250 tons per year.

Therefore, because the facility did not emit and did not have the potential to emit 250 tons or more per year of any regulated air pollutant, the source as it existed in the time period immediately prior to 2015 was not a Major Source with respect to the Prevention of Significant Deterioration provisions in Chapter NR 405, Wis. Adm. Code.

#### **Construction Permit 14-RSG-142**

Construction Permit 14-RSG-142 was issued by the WDNR on March 9, 2015 after CLCM's organization, primarily for the consolidation of operations onto the Pennsylvania Avenue building. Given the prior analysis that the existing source was not classified as a Major Source, the project would be subject to PSD regulations only if the project itself constituted a Major Source. Therefore, we examine the emission increase for the Project.

For this project, the wash line (P80A, P80B, and P80C) was proposed to be unchanged except for the replacement of the scrubber used to reduce emissions and a change to restrictions on operating hours. The existing Small Plastic Drum Caustic Pre-Flush (P95) at the Pennsylvania Avenue building was also redirected from the former to the new scrubber. The wash line was previously limited to no more than 100 hours of operation in any week. After issuance of permit 14-RSG-142, the facility was restricted to operation only between the hours of 5:00 a.m. and 11:00 p.m., effectively allowing an increase of 1,370 hours per year for the sources previously limited to 100 hours per week.

Additional downstream processes (Exterior Wash/Soaker (P72) and Internal Double Split Washer (P74), both for processing of steel drums) were added, also venting to the replacement scrubber. These emission units are located downstream from the main portion of the wash line, after the vapor space within the drums has already been evacuated by processing in P80A, P80B, and P80C. Therefore, emissions attributable to Processes P72 and P74 are relatively insignificant.

The emission sampling protocol discussed previously was used to quantify potential emissions from the combination of the above described operations. In total, potential emissions from the combination of these emission units was determined to be 176.24 tons of VOC per year, calculated as follows:

$$53.65 \text{ lb} \frac{\text{VOC}}{\text{hour}} \times 6,570 \frac{\text{hours}}{\text{year}} \times \frac{\text{Ton}}{2,000 \text{ lb}} = 176.24 \text{ tons} \frac{\text{VOC}}{\text{year}}$$

As noted previously, the sampling protocol that resulted in the measured emission rate of 53.65 pounds of VOC (as propane) per hour likely included emissions from fugitive sources such as the Plastic Drum Label Stripping (P44), the Poly Drum Wipe Cleaning (P45), and fugitive emissions from the Paint Line (P32B and P32C), because the building acted as a total enclosure, with exhaust limited to the scrubber, the paint booth, and the paint drying oven. These operations have separate permit restrictions that establish their potential to emit as discussed below, and no attempt was made to exclude emissions from these operations from the measurements from the sampling protocol. This may result in a double-counting of some emissions in the plant-wide potential to emit.

Several combustion sources tied to specific equipment were removed, and replaced with non-dedicated units, and a paint line (spray booth P32C and drying oven P32B) was relocated from within the existing source, relocated from the Norwich Avenue building contiguous with the Pennsylvania Avenue building.

The potential emissions from the paint line were limited by the construction permit to 3.5 pounds of VOC per gallon of paint, excluding water, in accordance with Chapter NR 422, Wisconsin Administrative Code. Coating usage was limited to 3,200 gallons per month averaged over any 12-consecutive month period. Additionally, cleanup solvent use for the line was required by the permit not to contain VOC. These limits restrict the potential VOC emissions from the paint booth to 36.96 TPY, assuming an average coating water content of 45%, calculated as follows:

$$3.5 \frac{\text{lb VOC}}{\text{gal}} (\text{excl. H}_2\text{O}) \times 3,200 \frac{\text{gallons}}{\text{mo}} \times (1 - 45\% \text{ H}_2\text{O content}) \times 12 \frac{\text{mo}}{\text{year}} \times \frac{\text{ton}}{2,000 \text{ lb}} = 36.96 \text{ TPY}$$

Additional permit conditions were established under Permit 14-RSG-142, and in several instances the new conditions were more stringent than previously imposed under operation permit 241063570-P12. Processes P44 and P45, both existing sources at the Pennsylvania Avenue building, were subjected to more restrictive limits on emissions with the issuance of permit 14-RSG-142, reducing allowed emissions from 10 tons VOC per year each to 1.73 and 5.04 tons VOC per year respectively. The drum delabeling operation (P71) was restricted to use of non-VOC solvent. Finally, the combustion sources at the facility are shown to have the potential to emit 0.23 tons of VOC per year.

In total, after the project, the potential to emit is determined to remain below 250 TPY for VOC. As the potential to emit is below 250 TPY, it can therefore be concluded that the emission increase for the Project is also below 250 TPY. Actual emissions have been shown to be approximately 50 tons VOC per year. Therefore, because the change would not constitute a major stationary source by itself, the project would not have been subject to the PSD regulations.

The following table is presented to summarize the various changes proposed with the permit application.

<b>Preliminary Determination, FID No. 341158070, Permit No. 14-RSG-142</b>		
<b>Existing at Penn</b>	<b>Relocated from Norwich</b>	<b>New</b>
<p>Interior Caustic Flush (P80A) Exterior Wash/Soaker (P80B) Exterior Rinse (P80C)</p> <p>Both plastic drums and steel drums undergo process P80A. Only plastic drums undergo processes P80B and P80C.</p> <p>Flamer (P41)</p> <p>Hot Water Heater (P42C) Maximum heat input rate: 1.75 MMBtu/hr</p> <p>Scrubber (C21; S21)</p> <p>Plastic Drum Label Stripping (P44)</p> <p>Poly Drum Wipe Cleaning (P45)</p> <p>Small Poly Drum Caustic Pre-Flush (P95)</p>	<p>Paint Line (P32B and P32C)</p> <p>Closed Drum Drying Oven (P50C) – proposed but not relocated.</p>	<p>Bung Wash (P11)</p> <p>Natural Gas fired Water Heaters:</p> <ul style="list-style-type: none"> <li>• P12 (2.0 MMBtu/hr)</li> <li>• P13 (2.0 MMBtu/hr)</li> <li>• P14 (3.6 MMBtu/hr)</li> <li>• P15 (2.0 MMBtu/hr)</li> </ul> <p>Label Remover High Pressure Washer (P16)</p> <p>Delabeling (P71)</p> <p>Exterior Wash/Soaker (P72)</p> <p>Exterior Rinse (P73) – proposed but not installed.</p> <p>Internal Double Split Washer (P74)</p> <p>Acidizer (P75)</p> <p>Shot Blaster (P76)</p>
Internal Poly Drum Washer (P42) – replaced existing Internal Poly Drum Washer (P42)		
<p><b>Equipment Removed</b></p> <ul style="list-style-type: none"> <li>• 2.5 MMBtu/hr natural gas-fired Hot Caustic Heater (P90A) and stack S67</li> <li>• 2.5 MMBtu/hr natural gas-fired Hot Caustic Heater (P90B) and stack S68</li> <li>• 2.5 MMBtu/hr natural gas-fired Hot Water Heater (P90C) and stack S69</li> <li>• 1.75 MMBtu/hr natural gas-fired Hot Water Heater (P42A) and stack S64</li> <li>• 1.75 MMBtu/hr natural gas-fired Hot Water Heater (P42B) and stack S63</li> <li>• 1.75 MMBtu/hr Hot Caustic Heater portion of P80A and stack S60</li> <li>• 1.75 MMBtu/hr Hot Caustic Heater portion of P80B and stack S61</li> </ul>		

### **Conclusions**

Federally enforceable permit conditions have been in effect for several years requiring the use of the scrubber to control emissions from the drum washing operations, and restricting facility-wide emission rates. The Potential to Emit and actual emission rates were less than 250 tons of VOC per year at the time of the 2014 permit application, and therefore, the source would not have required a PSD permit unless the project itself was a Major Source. The potential to emit after the project remains below 250 tons of VOC per year and the emission increase attributable to the project is determined to also be less than 250 tons of VOC per year. Therefore, because the change would not constitute a major stationary source by itself, the project would not have been subject to the PSD regulations.